

I would just like to compare and contrast DSL and BPL. I have done extensive leakage testing on DSL systems operating in 20KHz - 2 Mhz. The tests I have done on these circuits used HP/Agilent 8568B spectrum analyzers with various closed loop coupling probes. The results showed that the combination of twisted pair construction of telephone wire combined with polyethylene construction which exhibited electric field confinement and shielding similar to coaxial cable within these frequency band. In contrast, the Medium Voltage (MV or ~12 KV) nature of the residential power distribution network does not permit "twisted pair" construction due to the reliance on air dielectric for separation of conductors out of phase. Consequently, the shielding effect which makes cable modems and DSL functional in residential areas without interference is not present in BPL systems. The radiation of brief energy bursts happens due to an unconfined e-field between conductors which starts the propogation of an E-M wave.

This fundamental flaw in using MV wiring for distribution of a packetized data modulation guarantees radiated RF energy that can be picked up at long distances due to the nature of the MV distribution grid design.

A more practiacal design has been implemented in other MV distribution systems whereby a 0V neutral wire is combined with multistrand fiber. Due to its low (0v) potential, it can be routed down the power poles periodically and earthed, while also providing a splicebox for the individual fibers carried with this neutral lead.

In summary, the unique properties of twisted pair and shielded cable do not exist in power distribution networks. The right of way, however, still exists to implement practical "last mile" connections. Properly installed and maintained these links could provide the grid owners with a revenue source based on their right of way and not their actual current carrying conductors, which radiate energy levels outside of existing part 15 rules.

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